

Algebra/Topology Seminar

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REGULAR LANGUAGES FOR CONTRACTING GEODESICS IN GROUPS

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1:15 p.m. in ES-143

ABSTRACT. A celebrated theorem due to Cannon states that for any finite generating set S of a hyperbolic group, the language consisting of all geodesics in $\text{Cay}(G, S)$ is a regular language. This theorem has many interesting consequences, for example, it implies that the growth function of a hyperbolic group must be a rational function, for any finite generating set S . I will speak about our theorem with Eike generalizing the above theorem to all hyperbolic-like geodesics of a finitely generated group. In other words, our theorem states that for any finitely generated group G and any finite generating set S , the language consisting of all hyperbolic-like geodesics in $\text{Cay}(G, S)$ is a regular language. A geodesic c is said to be D -hyperbolic-like if there exists some $D > 0$ such that every ball disjoint from c , once projected to c , projects to a subset of diameter at most D (think about the axis of a in $F_2 = \langle a, b \rangle$). Also, a group $G = \langle S \rangle$ is hyperbolic if and only if there exists some D such that every geodesic is D -hyperbolic like, and hence, our theorem recovers Cannon's theorem. The talk will be entirely self contained and accessible to everyone.